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ESTD.1976 MULTI CHEM YOUR CHEMICAL PARTNER

SAFETY DATA SHEET

FUMARIC ACID

SECTION 1: Identification of the substance/mixture and of the company/undertaking Trade name:

1.1 Product identifier:	
CAS Number:	110-17-8
EC number:	203-743-0
1.2 SYNONYMS:	• Trans-butenedioic acid • (E)-butenedioic acid • Fumarate

SECTION 2: Hazards identification:

2.1 Classification of the substance or mixture:	Classification according to Regulation (EC) No 1272/2008 The substance is classified according to the CLP regulation.
2.2 Label elements:	Labelling according to Regulation (EC) No 1272/2008 Eye irritation (Category 2), H319
Hazard Pictograms:	
Signal Word:	Warning
Hazard statements:	**H319** Causes serious eye irritation.
Precautionary Statements:	**P264:** Wash skin thoroughly after handling. **P280:** Wear eye protection/ face protection. **P305 + P351 + P338:** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. **P337 + P313:** If eye irritation persists: Get medical advice/ attention.

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	P391: Collect spillage. **P405:** Store locked up. **P501:** Dispose of contents/ container to an approved waste disposal plant.
2.3 Other hazards:	
Inhalation:	can cause respiratory irritation, coughing, and difficulty breathing.
Ingestion:	can cause gastrointestinal irritation, nausea, vomiting, and abdominal pain.
Skin Contact:	can cause irritation, redness, and inflammation.
Eye contact:	can cause irritation, redness, and potential damage to the cornea.
Chronic Exposure:	may lead to prolonged irritation of the respiratory system, skin, or eyes, and in rare cases, it could cause more serious health issues like allergic reactions or skin sensitization.
Aggravation of pre-existing conditions:	may aggravate pre-existing respiratory conditions, such as asthma or chronic bronchitis, as well as skin conditions like dermatitis or eczema, due to its irritating properties.

SECTION 3: Composition/information on ingredients

3.1 Chemical characterisation:	Substances
CAS No:	Description: 110-17-8 FUMARIC ACID
Identification number(s):	EC number: 203-743-0

SECTION 4: First aid measures

4.1 Description of first aid measures	
General information:	

After inhalation:	If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
After skin contact:	Remove contaminated clothing immediately .Wash with plenty of water. Consult a physician.
After eye contact:	Immediately flush eyes with plenty of water for at least 15 minutes. consult a physician.
After swallowing:	Rinse mouth with water. Immediately after ingestion. If conscious, make victim drink two glasses at most immediately. Never give anything by mouth to an unconscious person. Do not induce vomiting. Consult a physician.
4.2 Most important symptoms and effects, both acute and delayed:	Acute exposure can cause respiratory, gastrointestinal, and skin irritation, while delayed effects may include persistent skin or respiratory sensitivity and inflammation.
4.3 Indication of any immediate medical attention and special treatment needed:	Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media:	Carbon dioxide. Water spray. Alcohol-resistant foam.
5.2 Special hazards arising from the substance or mixture:	Carbon oxides, nitrogen oxides, hydrogen chloride gas.
5.3 Advice for firefighters:	Wear fully protective suit, safety glasses and respiratory device. Cool tanks/drums with water spray/remove them into safety.
5.4 further information:	no data available

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SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:	Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Avoid dust accumulation. Seek medical attention.
6.2 Environmental precautions:	Do not enter this chemical into drains.
6.3 Methods and material for containment and cleaning up:	Take up spill into absorbent material, e.g.: sand, earth, vermiculite, powdered limestone. Scoop absorbed substance into closing containers. Spill must not return in its original container. Clean contaminated surfaces with an excess of water. Wash clothing and equipment after handling.

SECTION 7: Handling and storage

7.1 Precautions for safe handling:	For use in are with adequate ventilation. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not use in confined spaces. Electrostatic discharge protection. Minimize dust generation and accumulation. Avoid ingestion and inhalation.
7.2 Conditions for safe storage, including any incompatibilities:	Store in original containers. Keep containers securely sealed Store in a cool, dry, well-ventilated area. Store away from incompatible materials and foodstuff containers.

	Protect containers against physical damage and check regularly for leaks. Store in a dry and dark area. Avoid moisture.
Requirements to be met by storerooms and receptacles:	Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
7.3 Specific end uses:	no data available

SECTION 8: Exposure controls/personal protection

8.1 Control parameters	
Additional information about design of technical facilities:	A system of local and general exhaust is recommended.
8.2 Exposure controls	
Appropriate engineering controls	Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.
Personal protective equipment:	Dust respirator, protective masks, wearing anti chemical gloves, rubber gloves, etc.
General protective and hygienic measures:	Eyes, body and hand protection, maintain indoor air unobstructed. Wear protective equipment.
	Respiratory protection: Required.
Protection of hands:	Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws. Wash and dry hands.
	Eye protection: Required

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Protection of Body:	Complete suit protecting against chemicals, Flame retardant antistatic protective clothing.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties General Information	
Appearance: Form:	Crystalline Powder
Colour:	White
Odour:	Odourless
pH-value:	3
Melting point/Melting range:	290°C
Boiling point/Boiling range:	Not determined
Flammability (solid, gaseous):	Flammable when exposed
Ignition temperature:	Not determined
Decomposition temperature:	290°C
Self-igniting:	None
Flash point:	No data available
Danger of explosion:	None
Explosion limits: Lower:	Not determined
Explosion limits: Upper:	Not determined
Vapour pressure:	Not determined
Density at 20 °C:	1.56 g/cm³
Relative density:	1.56
Vapour density:	Not applicable
Evaporation rate:	Not applicable
Solubility in / Miscibility with- ·water at 20 °C:	Readily Soluble
Partition coefficient:(n-octanol/water)	0.69
Viscosity:	Not applicable

SECTION 10: Stability and reactivity

10.1 Reactivity	Stable at room temperature
10.2 Chemical stability	This chemical is stable under storage conditions.

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10.3 Possibility of hazardous reactions	May react violently with strong oxidizers.
10.4 Conditions to avoid	High temperatures, direct sunlight, open flames.
10.5 Incompatible materials	Strong oxidizing agents, strong acids and bases.
10.6 Hazardous decomposition products	Carbon dioxide, carbon monoxide.

SECTION 11: Toxicological information

11.1 Information on toxicological effects	
Acute Toxicity:	**LD50** (Oral, Rat): 9.300 mg/kg **LD50** (Dermal, Rabbit): no data available **LC50** (Inhalation Rat): 1,306 mg/l (4 hr)
Skin corrosion/Irritation:	No data available
Serious eye damage/irritation:	Causes eye irritation
Respiratory damage/irritation:	No data available
Ingestion:	No data available
Germ cell mutagenicity:	No data available
Carcinogenicity:	No data available
Reproductive toxicity:	No data available
Specific target organ toxicity - single exposure:	No data available
Specific target organ toxicity - repeated exposure:	No data available
Aspiration hazard:	No data available
Signs and Symptoms of Exposure:	Refer section 2.3
11.2 Additional toxicological information	
Biodegradability:	Readily Biodegradable

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SECTION 12: Ecological information

12.1 Toxicity **Aquatic toxicity:**	LC50(fish): 100 mg/l (96 hr) EC50(daphnia): 100 mg/l (48 hr) ErC50(algae): 100 mg/l (72 hr)
12.2 Persistence and degradability:	Readily Biodegradable
12.3 Bioaccumulative potential:	Low bioaccumulative
12.4 Mobility in soil:	Moderate mobility
12.5 Other adverse effects:	No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods	
Uncleaned packaging **Recommendation:**	dispose of in accordance with local hazardous waste regulations
Recommended cleansing agents:	Water, mild detergent, baking soda, diluted vinegar or citric acid

SECTION 14: Transport information

14.1 UN-Number · ADR, ADN, IMDG, IATA:	3262
14.2 UN proper shipping name · ADR, ADN, IMDG, IATA:	FUMARIC ACID
14.3 Transport hazard class(es) · ADR, ADN, IMDG, IATA :	8
14.4 Packing group · ADR, IMDG, IATA:	3
14.5 Environmental hazards:	None
14.6 Special precautions for user:	Handle responsibly.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture **Directive 2012/18/EU**	Directive 2012/18/EU, under that this substance is not classified in listed substance

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Named dangerous substances:	This substance is not listed in the annex 1 to the directive.
15.2 Chemical safety assessment:	Chemical assessment has not been carried out.

SECTION 16: Other information

The data included was derived from international authoritative database and provided by the enterprise. Other information was based on the present state of our knowledge. We try to ensure the correctness of all information. However, due to the diversity of information sources and limitations of our knowledge, this document is only for reference. Users should make their independent judgment suitability of this information for their particular purposes. We do not assume responsibility for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.